

WHAT IS CLAIMED IS:

1 1) An isolated protein comprising a soluble CD97 α subunit, wherein said
 2 soluble α subunit is selected from the group consisting of α 1, α 2, and α 3, wherein:
 3 contact with said soluble α subunit increases adherence of endothelial cells;
 4 α 3 has a molecular weight of about 45 kDa in non-glycosylated form, has an
 5 EGF-like repeat selected from the group consisting of SEQ ID NO:1, SEQ ID NO:2, and
 6 SEQ ID NO:5, and is immunologically cross-reactive to an antibody that is specifically
 7 reactive to the protein of SEQ ID NO:6;

8 α 2 has a molecular weight of about 50 kDa in non-glycosylated form, has an
 9 EGF-like repeat selected from the group consisting of SEQ ID NO:1, SEQ ID NO:2, and
 10 SEQ ID NO:5, and is immunologically cross-reactive to an antibody that is specifically
 11 reactive to the protein of SEQ ID NO:6; and,

12 α 1 has a molecular weight of about 55 kDa in non-glycosylated form, has an
 13 EGF-like repeat selected from the group consisting of SEQ ID NO:1, SEQ ID NO:2, and
 14 SEQ ID NO:5, and is immunologically cross-reactive to an antibody that is specifically
 15 reactive to the protein of SEQ ID NO:6.

1 2. The isolated protein of claim 1, wherein said α 1 subunit further
 2 comprises an EGF-like repeat selected from the group consisting of SEQ ID NO:3, and SEQ
 3 ID NO:4, and

4 wherein said α 2 subunit further comprises EFG-like repeat SEQ ID NO:3.

1 3. The protein of claim 1, wherein the soluble CD97 α subunit is CD97
 2 α 2.

1 4. The protein of claim 1, wherein said protein is recombinantly
 2 produced.

1 5. An isolated mammalian protein comprising a soluble CD97 α subunit,
 2 wherein said subunit is an extracellular protein comprising at least 10 contiguous amino acids

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from the protein of SEQ ID NO:6, is increased at least five-fold upon maximal activation of a T-cell with a T-cell mitogen, and is immunologically cross-reactive to an antibody that is specifically reactive to the protein of SEQ ID NO:6.

6. An isolated nucleic acid encoding a soluble CD97 α subunit protein, wherein said CD97 α subunit protein is selected from the group consisting of α 1, α 2, and α 3, and wherein:

contact with said soluble α subunit increases adherence of endothelial cells; α 3 has a molecular weight of about 45 kDa in non-glycosylated form, has an EGF-like repeat selected from the group consisting of SEQ ID NO:1, SEQ ID NO:2, and SEQ ID NO:5, and is immunologically cross-reactive to an antibody that is specifically reactive to the protein of SEQ ID NO:6;

α 2 has a molecular weight of about 50 kDa in non-glycosylated form, has an EGF-like repeat selected from the group consisting of SEQ ID NO:1, SEQ ID NO:2, and SEQ ID NO:5, and is immunologically cross-reactive to an antibody that is specifically reactive to the protein of SEQ ID NO:6; and,

α 1 has a molecular weight of about 55 kDa in non-glycosylated form, has an EGF-like repeat selected from the group consisting of SEQ ID NO:1, SEQ ID NO:2, and SEQ ID NO:5, and is immunologically cross-reactive to an antibody that is specifically reactive to the protein of SEQ ID NO:6.

7. The isolated nucleic acid of claim 6, wherein said CD97 α subunit selected from the group consisting of α 1 and α 2, further comprises an EGF-like repeat selected from the group consisting of SEQ ID NO:3, and SEQ ID NO:4; and

wherein said α 2 subunit further comprises EFG-like repeat SEQ ID NO:3.

8. The nucleic acid of claim 6, wherein the soluble CD97 α subunit is CD97 α 2.

1 9. The nucleic acid of claim ~~6~~ operably linked in reverse orientation to a
2 promoter.

1 10. A nucleic acid of claim 6 operably linked to a promoter.

1 11. A host cell transfected with the nucleic acid of claim 9.

1 12. A host cell transfected with the nucleic acid of claim 10.

1 13. An isolated nucleic acid, encoding a soluble CD97 α subunit, of at
2 least 25 nucleotides in length, wherein said CD97 α subunit is selected from the group
3 consisting of α 1 and α 2 wherein:

4 contact with said soluble α subunit increases adherence of endothelial cells;

5 α 2 has a molecular weight of about 50 kDa in non-glycosylated form, has an
6 EGF-like repeat selected from the group consisting of SEQ ID NO:1, SEQ ID NO:2, and
7 SEQ ID NO:5, and is immunologically cross-reactive to an antibody that is specifically
8 reactive to the protein of SEQ ID NO:6; and,

9 α 1 has a molecular weight of about 55 kDa in non-glycosylated form, has an
10 EGF-like repeat selected from the group consisting of SEQ ID NO:1, SEQ ID NO:2, and
11 SEQ ID NO:5, and is immunologically cross-reactive to an antibody that is specifically
12 reactive to the protein of SEQ ID NO:6; and,

13 wherein said nucleic acid specifically hybridizes, under stringent conditions, at
14 least two-fold above background to a CD97 nucleic acid in a human genomic library.

1 14. The nucleic acid of claim 13, wherein the soluble CD97 α subunit is
2 CD97 α 2.

1 15. An antibody composition specifically reactive, under immunologically
2 reactive conditions, to a soluble CD97 α subunit selected from the group consisting of α 1 and
3 α 2, wherein:

4 α 2 has a molecular weight of about 50 kDa in non-glycosylated form, has an
5 EGF-like repeat selected from the group consisting of SEQ ID NO:1, SEQ ID NO:2, and
6 SEQ ID NO:5, and is immunologically cross-reactive to an antibody that is specifically
7 reactive to the protein of SEQ ID NO:6; and,

8 α 1 has a molecular weight of about 55 kDa in non-glycosylated form, has an
9 EGF-like repeat selected from the group consisting of SEQ ID NO:1, SEQ ID NO:2, and
10 SEQ ID NO:5, and is immunologically cross-reactive to an antibody that is specifically
11 reactive to the protein of SEQ ID NO:6.

1 16. The antibody composition of claim 15, wherein said composition
2 comprises at least three unique antibodies.

1 17. A method for determining the degree of inflammation at a site in a
2 mammal, comprising the steps of

3 a) contacting an antibody composition to a biological sample from said
4 site, wherein said antibody composition is specifically reactive, under immunologically
5 reactive conditions, to a soluble CD97 α subunit selected from the group consisting of α 1, α 2,
6 and α 3, wherein:

7 α 3 has a molecular weight of about 45 kDa in non-glycosylated form,
8 has an EGF-like repeat selected from the group consisting of SEQ ID NO:1, SEQ ID NO:2,
9 and SEQ ID NO:5, and is immunologically cross-reactive to an antibody that is specifically
10 reactive to the protein of SEQ ID NO:6;

11 α 2 has a molecular weight of about 50 kDa in non-glycosylated form,
12 has an EGF-like repeat selected from the group consisting of SEQ ID NO:1, SEQ ID NO:2,
13 and SEQ ID NO:5, and is immunologically cross-reactive to an antibody that is specifically
14 reactive to the protein of SEQ ID NO:6; and,

15 α 1 has a molecular weight of about 55 kDa in non-glycosylated form,
16 has an EGF-like repeat selected from the group consisting of SEQ ID NO:1, SEQ ID NO:2,
17 and SEQ ID NO:5, and is immunologically cross-reactive to an antibody that is specifically
18 reactive to the protein of SEQ ID NO:6;

b) incubating said antibody composition with said biological fluid under immunologically reactive conditions conducive to formation of an antibody:CD97 α subunit complex, wherein detection of the amount of said complex indicates the extent of inflammation at said site.

18. The method of claim 17, wherein said biological sample is selected from the group consisting of blood, synovial fluid, and cerebrospinal fluid.

19. A method for identifying a compound which inhibits soluble CD97 α subunit expression, comprising:

(a) contacting, under cell culture conditions, said compound with a resting T-cell and an effective amount of a T-cell mitogen, wherein said compound is present in at least nanomolar concentrations; and

(b) assaying for changes in the expression level of said CD97 α subunit, wherein said subunit is selected from the group consisting of α 1, α 2, and α 3, and wherein:
 α 3 has a molecular weight of about 45 kDa in non-glycosylated form, has an EGF-like repeat selected from the group consisting of SEQ ID NO:1, SEQ ID NO:2, and SEQ ID NO:5, and is immunologically cross-reactive to an antibody that is specifically reactive to the protein of SEQ ID NO:6;

α 2 has a molecular weight of about 50 kDa in non-glycosylated form, has an EGF-like repeat selected from the group consisting of SEQ ID NO:1, SEQ ID NO:2, and SEQ ID NO:5, and is immunologically cross-reactive to an antibody that is specifically reactive to the protein of SEQ ID NO:6; and,

α 1 has a molecular weight of about 55 kDa in non-glycosylated form, has an EGF-like repeat selected from the group consisting of SEQ ID NO:1, SEQ ID NO:2, and SEQ ID NO:5, and is immunologically cross-reactive to an antibody that is specifically reactive to the protein of SEQ ID NO:6;

wherein a reduced level of expression of said subunit relative to a negative control identifies said compound as an inhibitor.

1 20. The method of claim 19, wherein said T-cell mitogen is selected from
2 the group consisting of phytohemagglutinin, concanavalin A, phorbol 12-myristate 13-
3 acetate, and pokeweed mitogen.

1 21. The method of claim 19, wherein changes in the expression of said
2 CD97 α subunit are determined by immunoassay or nucleic acid assay.

1 22. A method for inhibiting angiogenesis associated with chronic
2 inflammation in a mammal, comprising administering a therapeutically effective amount of a
3 CD97 antagonist selected from the group consisting of CD97 subunit antisense nucleic acid,
4 CD97 subunit α decoy protein, and anti-CD97 α subunit antibody, wherein said CD97-
5 subunit is selected from the group consisting of α 1, α 2, α 3, and β wherein:

6 α 3 has a molecular weight of about 45 kDa in non-glycosylated form, has an
7 EGF-like repeat selected from the group consisting of SEQ ID NO:1, SEQ ID NO:2, and
8 SEQ ID NO:5, and is immunologically cross-reactive to an antibody that is specifically
9 reactive to the protein of SEQ ID NO:6;

10 α 2 has a molecular weight of about 50 kDa in non-glycosylated form, has an
11 EGF-like repeat selected from the group consisting of SEQ ID NO:1, SEQ ID NO:2, and
12 SEQ ID NO:5, and is immunologically cross-reactive to an antibody that is specifically
13 reactive to the protein of SEQ ID NO:6;

14 α 1 has a molecular weight of about 55 kDa in non-glycosylated form, has an
15 EGF-like repeat selected from the group consisting of SEQ ID NO:1, SEQ ID NO:2, and
16 SEQ ID NO:5, and is immunologically cross-reactive to an antibody that is specifically
17 reactive to the protein of SEQ ID NO:6; and

18 β has a molecular weight of about 28 kDa as an unglycosylated protein and is
19 immunologically cross-reactive to an antibody that is specifically reactive to the protein of
20 SEQ ID NO:6.

1 23. The method of claim 22, 24, wherein the therapeutically effective
2 amount is administered topically or parenterally.

24. A method for inhibiting atherosclerosis in a mammal, comprising administering a therapeutically effective amount of a CD97 antagonist selected from the group consisting of CD97 subunit antisense nucleic acid, CD97 subunit α decoy protein, and anti-CD97 α subunit antibody, wherein said CD97-subunit is selected from the group consisting of α 1, α 2, α 3, and β wherein:

α 3 has a molecular weight of about 45 kDa in non-glycosylated form, has an EGF-like repeat selected from the group consisting of SEQ ID NO:1, SEQ ID NO:2, and SEQ ID NO:5, and is immunologically cross-reactive to an antibody that is specifically reactive to the protein of SEQ ID NO:6;

α 2 has a molecular weight of about 50 kDa in non-glycosylated form, has an EGF-like repeat selected from the group consisting of SEQ ID NO:1, SEQ ID NO:2, and SEQ ID NO:5, and is immunologically cross-reactive to an antibody that is specifically reactive to the protein of SEQ ID NO:6;

α 1 has a molecular weight of about 55 kDa in non-glycosylated form, has an EGF-like repeat selected from the group consisting of SEQ ID NO:1, SEQ ID NO:2, and SEQ ID NO:5, and is immunologically cross-reactive to an antibody that is specifically reactive to the protein of SEQ ID NO:6; and

β has a molecular weight of about 28 kDa as an unglycosylated protein and is immunologically cross-reactive to an antibody that is specifically reactive to the protein of SEQ ID NO:6.

25. A method of treating or inhibiting CD97 associated inflammation in a mammal, comprising administering a therapeutically effective amount of a CD97 antagonist selected from the group consisting of CD97 subunit antisense nucleic acid, CD97 subunit α decoy protein, and anti-CD97 subunit antibody, and wherein said CD97-subunit is selected from the group consisting of α 1, α 2, and α 3, wherein:

α 3 has a molecular weight of about 45 kDa in non-glycosylated form, has an EGF-like repeat selected from the group consisting of SEQ ID NO:1, SEQ ID NO:2, and SEQ ID NO:5, and is immunologically cross-reactive to an antibody that is specifically reactive to the protein of SEQ ID NO:6;

10 $\alpha 2$ has a molecular weight of about 50 kDa in non-glycosylated form, has an
11 EGF-like repeat selected from the group consisting of SEQ ID NO:1, SEQ ID NO:2, and
12 SEQ ID NO:5, and is immunologically cross-reactive to an antibody that is specifically
13 reactive to the protein of SEQ ID NO:6; and,

14 $\alpha 1$ has a molecular weight of about 55 kDa in non-glycosylated form, has an
15 EGF-like repeat selected from the group consisting of SEQ ID NO:1, SEQ ID NO:2, and
16 SEQ ID NO:5, and is immunologically cross-reactive to an antibody that is specifically
17 reactive to the protein of SEQ ID NO:6.

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